Amendments to the Specification:

Please replace paragraph 08 with the following amended paragraph:

Fig. 1 is a simplified block diagram of a prior art MIMO TCM encoder 10. TCM encoder 10 includes a serial-to-parallel converter 12, a convolutional encoder 14, a symbol mapper 16 and a serial-to-parallel converter 18. The MIMO system (not shown) of which MIMO TCM encoder 10 is a part, includes M_t transmit antennas and M_r receive antennas (not shown). The channel through which the data encoded by TCM encoder 10 is transmitted is characterized by the complex matrix **H** having the dimensions of [[M_t x M_r]] M_r x M_t. The channel is assumed to be an AWGN channel. Convolutional encoder 14 in conjunction with symbol mapper 14 perform the TCM encoding.

Please replace paragraph 15 with the following amended paragraph:

To perform the above search, the decoder receives vector **r** of the received symbols--received on the M_r receive antennas--and a channel matrix **H** having M_t ~~rows~~ columns and M_r ~~columns~~ rows to characterize the channel between the M_t transmit antennas and the M_v receive antennas. Next, the decoder forms a vector quantity $\mathbf{xopt}_1$ representing an optimized guess for the symbol transmitted by a first one of the transmit antennas and whose elements are defined by a combination of a first column $\mathbf{h}_1$ of matrix **H**, the remaining columns $\mathbf{H}_{n\neq 1}$ of matrix **H** and a matrix **X** of possible symbols transmitted on the remaining transmit antennas. Matrix **X** thus includes (M_t-1) rows and 2^{u+n} columns. The decoder then uses the vector quantity $\mathbf{xopt}_1$ to compute a distance metric and a label metric associated with each of the remaining transmit antennas. Next, the decoder forms another vector quantity $\mathbf{xopt}_2$ representing another optimized guess associated with a second one of the transmit antennas. Accordingly, vector quantity $\mathbf{xopt}_2$ includes elements defined by a combination of a second column $\mathbf{h}_2$ of matrix **H**, the remaining columns $\mathbf{H}_{n\neq 2}$ of matrix **H**, and matrix **X**. The decoder uses the vector quantity

$\mathbf{xopt}_2$ to compute a distance metric and a label metric associated with the first transmit antenna. The first and second antennas could be any pair of transmit antennas.